

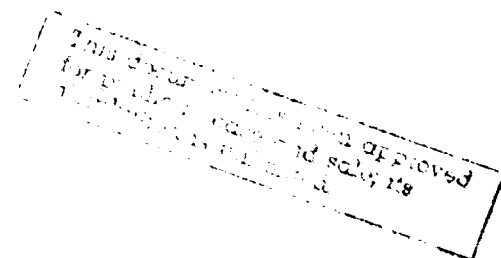
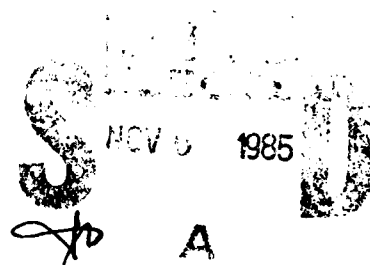
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Summary Version, Marine Corps Life Cycle Cost Model

by

MAJOR Ken Koelln  
and  
Mrs. Martha Hodnett

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## ABSTRACT

The Summary Version, Marine Corps Life Cycle Cost Model was developed to provide comparable life cycle cost data to the decisionmaker on alternative investment programs at a minimum cost. The existing Marine Corps Life Cycle Cost Model (Defense Materiel Systems Life Cycle Cost Model) is flexible and complete, but often requires more investment of time and resources than the results justify for systems in the early stages of development.

➤The model was developed to run on an IBM-compatible personal computer using the BASICA programming language. The structure of the existing Marine Corps Life Cycle Cost Model was adopted and simplified to fit the aggregate data likely to be available in early stages of system development. The work breakdown structure is simplified to a less structured system-subsystem scheme, personnel requirements input is in much less detail, training requirements are calculated in the aggregate, and a general maintenance structure is built into the model. Inflation is handled by the model, but discounting is not provided for.

The model is an "accounting" type model. It provides no parametric costing capability. It is primarily designed to provide a standard format for preparing cost estimates and a standard set of cost factors, such as personnel costs by grade, storage space costs, and overhead percentages. Investment costs are primarily throughput, but the model provides considerable assistance in calculating Operations and Support costs. The model was designed so

that the average action officer could produce a reasonable cost estimate in about two man days (1 1/2 days of research, 1/2 day of data input).

The model has been in general use throughout Headquarters Marine Corps and the Marine Corps Development and Educational Command, Quantico, for over a year, and it has met with widespread acceptance. We are currently publishing the second annual revision, which will include a sensitivity analysis capability. (Until now, to re-run the model with a data element change required that all data be re-entered.) The Summary Version Life Cycle Cost Model has increased the availability of cost estimates to the Headquarters Marine Corps decisionmakers at the program initiation phase and improved the quality and standardization of those estimates. At the same time, it has increased action officers' awareness of significant cost drivers in their programs.



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## SUMMARY VERSION, MARINE CORPS LIFE CYCLE COST MODEL

### I. Introduction

The purpose of this paper is to describe the development and implementation of the Summary Version, Marine Corps Life Cycle Cost Model. The unique features of this model are that: (1) it was developed without contractor support; (2) it is designed for use by Headquarters Marine Corps action officers rather than cost analysts; and (3) it was designed to run on personal computers rather than a mainframe. It is the authors' belief that these characteristics make the Summary Version, Marine Corps Life Cycle Cost Model worth looking at more closely.

The above features limit the model, reducing its usefulness for programs which have reached Milestone II and beyond. The simplified data requirements and the resulting summary cost estimate are ideal for acquisition programs in the early stages of development, when detailed data is not available, precise estimates are not required, and program changes are frequent.

### II. Background

The Marine Corps requires a life cycle cost estimate at each milestone of the systems acquisition cycle.<sup>1</sup> Less formally, a life cycle cost estimate is also required when a system is proposed for inclusion in the Marine Corps Program Objective Memorandum (POM). Prior to publication of the Summary Version, Marine Corps Life Cycle Cost Model in July 1984, the program sponsor had three basic options:

- a. Perform an "ad hoc" life cycle cost estimate, either in-house or using a consultant;
- b. Perform a life cycle cost estimate using the Marine Corps Life Cycle Cost Model (MCLCCM), also known as the Defense Material Systems Life Cycle Cost Model;
- c. Hire a potential production contractor to provide a life cycle cost estimate.

All these options have drawbacks for programs early in the acquisition cycle. Ad hoc (or free-form) estimates are generally not comparable between programs, and they take a large number of man-hours to produce. Production contractors are likely to underestimate life cycle costs of systems they produce. The MCLCCM provides a complete, flexible model, but its high degree of complexity is unnecessary at the program initiation stage and discourages users who do not, as yet, have sufficiently detailed program data for the MCLCCM. The MCLCCM can not be run by a novice, so consulting expenses are incurred. Also, that model is resident on a commercial time-sharing system, so funds are required for computer time.

The need therefore existed for a complete, flexible model which could be used for programs early in the acquisition cycle. It was decided that the new model had to be compatible with the MCLCCM to facilitate a smooth transition to that model as the acquisition program matured and more detailed estimates were required. Also, if it could be run on a microcomputer costs could be reduced and availability and convenience enhanced. Finally, the new model had to be simple enough for

the novice to use without consulting a professional cost analyst.

### III. Development of the Model

The staff of the Deputy Chief of Staff for Requirements and Programs (DC/S R&P), Headquarters Marine Corps (HQMC), initiated a series of meetings in the fall of 1983 with the staffs of the Deputy Chief of Staff for Installations and Logistics (DC/S I&L), the Fiscal Director (FD), and the Development Center, Marine Corps Development and Education Command (MCDEC), Quantico, Virginia. The consultant who had developed the MCLCCM, working with DC/S I&L as the sponsor, was also included. It quickly became evident that DC/S I&L and the MCLCCM model developer were reluctant to provide a summary version which was independent of the MCLCCM and which could be run on a microcomputer. DC/S I&L was concerned that the summary version model would not provide the detail necessary for later phases of the acquisition process and that the transition between models would be difficult for a program during the acquisition cycle. The model developer seemed to be concerned with losing consulting fees and timesharing revenues. The authors therefore undertook the development of the model with support and advice from the Investment and Analysis Section, Fiscal Division, and the Analysis Support Section, Plans Division, Development Center, MCDEC.

It was decided that the summary version of the model would be compatible with IBM personal computers, which were becoming available at HQMC and MCDEC. The BASICA programming language

was chosen since it is used throughout the Marine Corps. This ensured the availability of machines which could operate the model. The summary version would be as consistent as possible with the MCLCCM, to facilitate the transition to the larger model with its greater detail. Also, the summary version was to be used by action officers, not cost analysts or computer specialists, so it had to be simple to understand and to operate. The goal was to provide reasonable and consistent cost estimates to decisionmakers for programs early in the acquisition cycle and to educate action officers as to which program parameters drive life cycle costs. Emphasis was to be placed on cost estimates for the operations and support phase of the life cycle, since reasonably accurate estimates are generally available for the research and development and acquisition phases.

#### IV. The Model

The Summary Version, Marine Corps Life Cycle Cost Model was published on 23 July 1984. It had been validated against the MCLCCM using sample data provided by Peter Kusek of the Marine Corps Operations Analysis Group (MCOAG), Center for Naval Analysis.

The model met the requirements as planned. The model is an "accounting" type model. It provides no parametric costing capability. It is primarily designed to provide a format for preparing cost estimates and a standard set of cost factors, such as personnel costs by grade, storage space costs, and overhead percentages.

The model was designed so that the average action officer could produce a reasonable cost estimate in about two man days (1 1/2 days of research, 1/2 day of data input). The summary version, by its nature, contains some simplifications and compromises to allow: (1) user friendliness; (2) simplified, less detailed data gathering; and (3) compatibility with micro-computers. These simplifications lead to certain model limitations, which include: (1) no cost scheduling beyond the program years; (2) limited work breakdown structure; and (3) no facility for discounting costs. In the early stages of the acquisition cycle, for which the summary version was designed, these limitations are not critical to cost estimation. The lack of work breakdown structure is handled through the separate costing of "subsystems" in the operations and support phase of the life cycle. The use of subsystems is a user option. The user is advised that if the systems being costed are homogeneous and within each system there is no widely divergent subsystem which will, by its nature, require separate costing, then the "no subsystems" option should be selected. This option reduces the volume of input required and therefore simplifies the costing.

The model emphasizes estimation of the costs of the operations and support phase of the life cycle, and provides little more than assistance with escalation for the research, development, test and evaluation phase and the investment phase. By requesting input in certain categories (like first and second destination transportation, military construction, and supporting equipment procurement), the model does direct the user to



search for costs associated with his program in these often-forgotten areas. By displaying these categories, the model highlights them and can indicate to the decisionmaker that potential costs have been ignored.

For the operations and support phase, the model requires input on the system's characteristics, such as "fuel and ammunition requirements per system per year, the number of operators, the mean time between failures and mean time between required preventive maintenance at various echelons of maintenance, etc. The Analysis Support Branch, Development Center, MCDEC, produced the Life Cycle Cost Estimating Handbook,<sup>2</sup> which contains a list of possible questions to be answered for a cost estimate. Based on the answers to these questions, using constants built into the model and updated annually, the model calculates and prints a funding profile, a life cycle cost estimate (LCCE), and other optional output. Samples of a funding profile and a life cycle cost estimate are at figures 1 and 2, respectively. The funding profile format is designed for use by programmers and budgeters, and reflects, during the program years, the annual expenditure on the program by appropriation. The right column, "Total Program", is calculated by the model based on the answers to the questions about the system's characteristics. The "To Completion" column represents the difference between "Total Program" and the sum of all other columns to the left of the "To Completion" column (the scheduled expenditures before and during the program years).

Major System: MAJOR SYSTEM

Date: 09-06-1985

LIFE CYCLE COST FORECAST

FUNDING PROFILE

In Thousands of FY87 Constant Budget Dollars  
(FYDP Dollars in Parentheses)

20 YEAR LIFE CYCLE

	PRIOR YEARS	CURRENT YEAR	BUDGET YEAR	FY88	FY89	FY90	FY91	FY92	TO COMPL'N	TOTAL PROGRAM
Major System:										
RDT&E	12,490	520	0	0	0	0	0	0	0	13,010
FYDP Dollars	(	500)(	0)(	0)(	0)(	0)(	0)(	0)(		
PMC	210	1,049	1,049	1,049	1,049	1,049	0	0	-254	5,198
FYDP Dollars	(	1,000)(	1,049)(	1,097)(	1,145)(	1,195)(	0)(	0)(		
QTYs FUNDED	0	10	10	10	10	10	0	0	0	50
Support:										
Support PMC	524	524	524	0	0	0	0	0	790	2,353
FYDP Dollars	(	500)(	524)(	0)(	0)(	0)(	0)(	0)(		
MILCON	2,077	0	0	0	0	0	0	0	-0	2,077
FYDP Dollars	(	0)(	0)(	0)(	0)(	0)(	0)(	0)(		
O&MC	0	10	21	31	42	52	52	52	20,300	20,550
FYDP Dollars	(	10)(	21)(	32)(	44)(	55)(	58)(	59)(		
MPMC	0	20	40	60	80	100	120	141	17,832	18,454
FYDP Dollars	(	20)(	40)(	60)(	81)(	102)(	122)(	143)(		
NAVY PROC	0	0	0	0	0	0	0	0	0	0
TOTAL PROGRAM	15,301	2,124	1,634	1,140	1,170	1,201	172	193	38,728	51,663
FYDP Dollars	(	2,030)(	1,634)(	1,189)(	1,270)(	1,354)(	180)(	202)(		

Figure 1. Funding Profile, Summary Version, LCCM

Major System: MAJOR SYSTEM

Date: 09-06-1965

LIFE CYCLE COST ESTIMATE  
(In Thousands of FY87 Constant Budget Dollars)

20 YEAR LIFE CYCLE

PHASE/CATEGORY	SUBCATEGORY	CATEGORY	PHASE
I. RDT&E PHASE			13,010
II. INVESTMENT PHASE			8,669
1. SYSTEM PRODUCTION/PROCUREMENT			5,240
A. Major End Item (Contractor)	4,678		
B. Initial Provisioning/Spares, Repair Parts	520		
C. Government Furnished/Added Equipment	0		
D. Other Direct System Costs	42		
2. SUPPORT EQUIPMENT PROCUREMENT			1,573
A. Ammunition	524		
B. Weapons and Tracked Combat Vehicles	0		
C. Guided Missiles	1,049		
D. Comm-Elec Equipment	0		
E. Support Vehicles	0		
F. Engineer and Other Equipment	0		
3. MILITARY CONSTRUCTION			2,077
III. OPERATIONS AND SUPPORT PHASE			39,763
1. OPERATIONS			19,118
A. Operator Personnel/Training	15,217		
B. Material Consumption	125		
C. Energy Consumption	3,776		
2. MAINTENANCE			18,143
A. Organizational Maintenance	6,477		
1) Personnel/Training	1,154		
2) Maintenance Material	166		
3) Repair Material	4,990		
4) Other	166		
B. Intermediate Maintenance	6,740		
1) Personnel/Training	364		
2) Maintenance Material	416		
3) Repair Material	5,545		
4) Other	416		
C. Depot Repair	2,327		
D. Depot Overhaul	1,851		
E. Unprogrammed Losses	749		
F. Software Maintenance	0		
3. INDIRECT SUPT, BASE OPS & MAINT, OTHER O/H COSTS			2,501
A. Base Operations	610		
B. Other Overhead Costs	1,891		
4. SUPPORT EQUIPMENT O&S			0
TOTAL LIFE CYCLE COSTS			61,663

Figure 2. Life Cycle Cost Estimate (LCCE), Summary Version, LCCM

The LCCE (figure 2) was designed for use by the cost analyst rather than the programmer or budgeter. No costs are scheduled, but aggregate costs over the entire life cycle are printed by subcategory, category, and phase. This format was adapted from the MCLCCM. These two printouts (funding profile and LCCE) are consistent in that the total life cycle costs match, but totals for phases, categories, and subcategories in the LCCE generally don't apply to a single appropriation in the funding profile, so while the printouts are consistent they are not parallel in their breakdowns.

The model also prints out the questions asked and the answers given as the answers are input. The user therefore has a record of what his input was and the results of that input (funding profile and LCCE). This allows review and subsequent sensitivity analysis. One of the main drawbacks of the original version of the model was the lack of a sensitivity analysis capability. Once the model was run for a system, the only way to change an input was to rerun the model entirely. This required from one-half to one and one-half hours, depending on the complexity of the system and the skill of the typist. This drawback was corrected in August, 1985, with the publication of the first major revision of the model. The model now includes a sensitivity analysis routine which allows changes to the previous input without duplicating unchanged data.

As mentioned above, the model was written in the BASICA programming language. This language was chosen primarily to allow compatibility with as many personal computers as possible.

The memory limitations imposed by BASICA were overcome by the process of "chaining" programs into the computer memory. The model consists of ten programs. Data is stored on the floppy disk containing the model. This technique allows computers with smaller memories to run the model.

#### V. Model Use

The model was distributed by memorandum in July, 1984.<sup>3</sup> Marine Corps Order 3900.4C was published in September, 1984; this Order required that a life cycle cost estimate be attached to program initiation documents.<sup>4</sup> The Order did not specify what method was to be used to produce the estimate, but it did require formats (funding profile and LCCE) identical to those produced by the model.

Since the Summary Version, LCCM is the easiest way to produce life cycle cost estimates which become attachments to program initiation documents, the Marines responsible for producing Required Operations Capability (ROC) documents became the initial users of the model. The Analysis Support Branch, Plans Division, Development Center, MCDEC, produced the Life Cycle Cost Estimating Handbook,<sup>2</sup> supported Development Project Officers with in-house consulting services, and began to develop a technical data base to assist in parametric estimation of certain input required by the summary version of the model. The Investment and Analysis Section, Budget Branch, Fiscal Division, has become active both in assisting action officers with producing cost estimates and in validating those estimates.

The result has been a significant increase in the quality of cost estimates available with ROC documents. These estimates are now comparable across programs because of the uniform format. Associated program costs which would previously have been overlooked are now at least stated. The use of these estimates by decisionmakers has not progressed as rapidly, but, as cost estimates become more available and the users become accustomed to seeing them, this is expected to change. The new sensitivity analysis routine will provide a much-needed capability to answer "what if" questions, and is expected to generate an increased level of interest. The reduced level of growth in available resources (shrinking defense budget) will also cause more interest in the model as interest in the life cycle costs of emerging acquisition programs increases.

A second major application of the model is to provide life cycle cost estimates for POM initiatives. Prior to introduction of the model, a "life cycle cost" estimate was required with POM initiatives for new acquisition programs. These estimates were used for cost benefit ranking as well as for developing programming impacts on accounts other than investment. These estimates were prepared by hand and little uniformity was present. Often an appeal to "incremental costing" allowed many costs to be omitted. Incremental costing may be appropriate for programming purposes, but probably not for cost benefit ranking, unless only marginal benefits are considered. In any case, the explicit statement of all costs associated with a system is valuable information for a decisionmaker. Costs which are fixed (as

opposed to incremental) for one decision may be incremental for another decision.

During POM-87 development a life cycle cost estimate using the Summary Version, MCLCCM was required for initiatives beginning in the outyears (FY-89, FY-90 or FY-91). This was a trial of the model use, and was less than fully successful. Since most new programs had been costed using the model for the requirements document, the transition to a POM initiative format was fairly trivial and saved time overall. The additional information required to produce a POM initiative consisted of further detail regarding the scheduling of initial operational capabilities and the distribution of systems to units. Two additional subroutines were designed to solicit the required information from users and produce appropriate printouts for use by those who review and evaluate POM initiatives.

The problem resulted from confusion on the part of the users of the model as to which printouts were to be included with the POM initiative, and on the part of the users of the POM initiative as to what information was available. For POM-88 development, the POM initiative routine will be "fine-tuned," with close coordination with the POM initiative users. A vigorous education campaign will be undertaken to ensure that the model users and the POM initiative users are familiar with what information is required and available from the model. These actions, together with the sensitivity analysis capability recently added to the model, should improve the acceptance of the model for use during the next POM cycle.

## VI. Summary

The Summary Version, MCLCCM was introduced in July 1984. It was developed entirely in-house, designed for use by action officers rather than cost analysts, and made to run on personal computers rather than on a mainframe. The model has been in general use throughout Headquarters Marine Corps and MCDEC for over a year, and it has been met with widespread acceptance. The first revision has been published; this revision includes a sensitivity analysis capability. The Summary Version, MCLCCM has increased the availability of cost estimates to Headquarters Marine Corps decisionmakers and improved the quality and standardization of those estimates. At the same time, it has increased action officers' awareness of significant cost drivers in their programs.



## REFERENCES

1. HQMC, MCO P5000.10A, "Systems Acquisition Management Manual," 27 January 1981.
2. U.S. Marine Corps Development and Education Command, "Life Cycle Cost Estimating Handbook," Analysis Support Branch, Plans Division, Development Center (undated).
3. HQMC, Memorandum RP-35-rlc/317, "Summary Version, Marine Corps Life Cycle Cost Model," Requirements and Programs Division, 13 July 1984.
4. HQMC, MCO 3900.4C, "Marine Corps Program Initiation and Operational Requirement Documents," 10 September 1984.

USERS GUIDE CHANGES FOR THE SUMMARY VERSION, MARINE CORPS  
LIFE CYCLE COST MODEL, 1985 UPDATE

Ref: (a) DC/S for R&P Memo dtd 13 July 84

Encl: (1) Sample Funding Profile Output

Introduction: This users guide will not be helpful if you have not run the model or read reference (a). The 1985 version incorporates four major changes to the model published by reference (a):

a. The entered data is stored on the floppy disk (which contains the program) as the user progresses through the model. This allows the model to be rerun for data changes and corrections without inputting all the data again. To accomplish this, a new subroutine entitled "CHANGES" has been added.

b. The questions regarding the type of dollars being input (FYDP or constant budget) have been changed in the Life Cycle Cost Estimate section in an attempt to make the selection process easier for the user.

c. The option of entering "unprogrammed requirements" in the Funding Profile has been removed to allow for displaying FYDP dollar amounts in parentheses under the constant budget dollar amounts.

d. You will be given the opportunity to identify whether the major system is to be procured with OMMC and/or OMMCR funds rather than PMC.

Other changes in this version of the model include raising

the default value for turnover time from two years to three, and requiring inputs of man-hours vice man-years for software maintenance requirements. Model parameters such as base pay, training costs, etc., have been updated, and escalators have been changed to yield CB87\$ vice CB86\$. Other changes have been incorporated which you will probably not notice as you are running the model. If your results are slightly different from the previous version, this probably represents a minor model improvement and should generate no concern. Major discrepancies should be reported to Mrs. Hodnett or Major Koelln, HQMC (RPE), 694-1009 or 694-1998.

Procedures: The fact that your input is now stored on the floppy disk containing the program facilitates running the entire model again while changing only certain inputs. This will allow both "sensitivity analysis" and also less tedious corrections of input errors. In order to allow the model to perform these operations, you will be required to dedicate a floppy disk with the program listing on it to each system being costed. If you reuse a disk for a different system, the data stored on that disk for the original system will be written over and therefore destroyed. To copy the model onto a blank disk for use on another system, first format the disk, then copy the following subroutines individually:

LCCM	CHANGES	CHPRNT	RESCUE
LCCE	CHLCCE	POMPRNT	
PRINT	CHLCCE1	POMINIT	

Other files you may find on a disk relate to stored data for a costed system and need not be copied. If you have a problem copying a disk, contact Mrs. Hodnett or Major Koelln, HQMC, RPE, 694-1009 or 694-1998.

The POM Initiative Routine has not been updated from the POM-87 version and should not be used until the POM-87 version is issued in September, 1985. The basic model can be run in preparation of a POM initiative; this will facilitate the production of a POM initiative when the model is updated.

Sensitivity Analysis: You can change any of your previous entries except for converting what was costed as a major system into subsystems, or vice versa. If you want to change that parameter you will have to rerun the entire model. You will find that for certain inputs the computer will take up to a couple of minutes to process the data and proceed with the next step. Be patient.

To run the model and change an entry, you will need the original floppy disk which was in drive A when you first ran the model for the estimate you now want to change. With DOS booted and the extended BASIC compiler loaded, insert the floppy disk containing the program into disk drive A and enter:

RUN "A:CHANGES"

Be sure your printer is on line.

You will see the following "main" menu on the screen:

PROGRAM CHANGES

This disk has data for the life cycle costing of (system name) last run/modified on (last run date). Do you want to change:

0. No changes/no MORE changes
1. Funding Profile data (to include adding/deleting specific Navy approps)
2. Life cycle years, number of operational end items, and operating hours per year

3. Life Cycle Cost Estimate data
4. Reserves data
5. Comments

(If you have not indicated reserve participation in the program, #4 will be comments and there will be no #5. If you want to add reserve participation to the program, enter #1, then #2 on the subsequent menu.)

The options are self-explanatory. Entering #2, #4 or #5 will lead directly to the data changing mode, while #1 or #3 will present you with different, "subordinate" menus. When you reach the data changing mode, the model will display the existing data and allow you to make changes. You will be led through the section of the model you have selected, then returned to the menu from which you made your selection.

If you select #1 from the main menu, you will be presented with the following menu:

#### FUNDING PROFILE CHANGES

Do you want to change:

0. No changes/no MORE changes
1. System Title
2. Reserves (to remove/add reserve equipment costs)
3. Quantities/Subsystem Titles
4. Funding for Marine Corps appropriations
5. Adding/deleting specific Navy appropriations
6. Number of subsystems

(If you do not have subsystems, #6 is omitted and #3 reads "Quantities".)

These options are self-explanatory. If you are not sure which option you want, try the options until you are presented with the data you want to change. You will not be forced to

change anything. When you have made the changes you want in the Funding Profile, enter 0 and you will be returned to the main menu.

If you select number 3 (Life Cycle Cost Estimate) from the main menu, you will be presented with the following subordinate menu (The main LCCE menu):

#### LIFE CYCLE COST ESTIMATE (LCCE) CHANGES

Do you want to change:

0. No changes/no more changes in LCCE
1. RDT&E or Investment Phase changes  
(This includes RDT&E phase costs, unit prices, initial provisioning, government furnished equipment, other direct systems costs, support procurement, Navy procurement, and military construction)
2. Operations and Support Phase Changes

An entry of zero will return you to the main menu. An entry of 1 will yield the following menu (after a delay of about one minute):

#### RDT&E AND INVESTMENT PHASE CHANGES

Do you want to change:

0. No changes/no more changes
1. RDT&E Phase costs and Unit Price(s)
2. Initial Provisioning, Government Furnished Equipment and Other Direct Systems Costs
3. Support Procurement, Navy Procurement and Military Construction costs

These options are self-explanatory. Entries of 1, 2, or 3 lead to the data review/change mode. An entry of zero will return you to the main LCCE menu.

An entry of 2 (Operations and Support Phase Changes) in the main LCCE menu will yield the following questions and explanation:

Do you want to make O&S Phase changes by:

1. Selecting a single subsystem, then selecting sections of the O&S Phase to change;
2. Selecting a section of the O&S Phase, then selecting which subsystem(s) to change for that section (may be one subsystem, more than one, all).

NOTE: #1 will allow you to make a universal change for a single subsystem more easily. #2 will allow you more flexibility in selecting different subsystems for 1 specific section of the O&S Phase.

After you make this choice, you will be presented with the following menu:

LIFE CYCLE COST ESTIMATE (LCCE) OPERATIONS AND SUPPORT PHASE CHANGES

Do you want to change:

0. No changes/no more changes
1. Operators (personnel), Material Consumption, Training Ammunition, Energy Use data
2. Organizational Maintenance data
3. Intermediate Maintenance data
4. Depot Repair/Overhaul data
5. Losses, Software Maintenance, or System Storage data  
OR
6. Change to a different subsystem

(number 6 will only appear if you have subsystems)

These selections are self explanatory. An entry of zero will return you to the main LCCE menu.

When you complete a data review entry section, you will be returned to the menu from which you exited, and you can branch from that menu to any place in the program. To exit the changes program and print your results, return to the main menu and

enter 0. The model will print out the basic data, as you have changed it, in similiar format to that provided when the data was first entered. You therefore have a written record of the input on which data output is based. You could obtain such a record by simply entering:

RUN "A:CHANGES"

and immediately exiting the main menu by entering 0.

When the input data has been typed, the model will ask if you want a final version (single-spaced) Life Cycle Cost Estimate (the alternative is a double-spaced report). If you answer yes, you will get a printout suitable for use as an enclosure to Program Initiation Documents. If you want to change some input, run "A:CHANGES" again. You will be changing the data you put in the last time you ran the model. Your original data is lost when you change it.

CORRECTING ERRORS: If you make an input error as you go through the model for the first time, you now have two options for correcting the data:

(1) The "Okay" routine. See page 2 of reference (a) for an explanation of how that works.

(2) Use "CHANGES" after you have input all your data. If you make a mistake which you can not correct by using the "Okay" routine, simply make a note of where the mistake was and complete your data input. The printout you get will not be what you want, but you can immediately enter RUN "A:CHANGES", make the appropriate correction and get the printout you do want.

If you make an error while running the "change" routine, simply select the same option from the menu when you return to



the menu. You will be allowed to "re-change" your input.

ESCALATION: The capabilities of the model have not been changed in terms of the escalation adjustments it will accomplish for you, but the questions have been changed to simplify your selection decisions. The Funding Profile section has only minor changes, and a "help" routine has been added to assist you in determining what type of dollars you are inputting. The single list of five options in the Life Cycle Cost Estimate has been broken into a series of questions, each with two or three possible responses. (Refer to figure 1 (next page) to help you follow the series of questions below.)

You are first asked:

Are ALL the rest of your dollar entries for this program  
(i.e., in the Life Cycle Cost Estimate portion):

1. ALL Constant Budget dollars;
2. ALL FYDP dollars;
3. A combination of Constant Budget and FYDP dollars.

If you answer #1, you are next asked:

Are your Constant Budget dollar entries:

1. ALL in the SAME BASE YEAR, or
2. In DIFFERENT base years for different entries.

If you answer #1, the model will handle any escalation required throughout the Life Cycle Cost Estimate phase after asking a single question as to the base year. If you answer #2, you will be asked for your base year each time you enter a dollar figure.

If you answer #2 (all FYDP dollars) to the initial question, you will be asked:

Are your FYDP dollar entries:

You are first asked:

Are ALL the rest of your dollar entries for this program (i.e., in the Life Cycle Cost Estimate portion):

1. ALL Constant Budget dollars;
2. ALL FYDP dollars;
3. A combination of Constant Budget and FYDP dollars.

Are your Constant Budget dollar entries:

1. ALL in the SAME BASE YEAR, or
2. In DIFFERENT base years for different entries.

If you answer #1, the model will handle any escalation required throughout the Life Cycle Cost Estimate phase after asking a single question as to the base year. If you answer #2, you will be asked for your base year each time you enter a dollar figure. ①

Are your FYDP dollar entries:

1. Each based on a SINGLE fiscal year, or
2. Partially composed of entries based on several years of FYDP dollars.

Are these single-year FYDP dollar entries:

1. All based on a year which you can specify now, or
2. Based on different single fiscal years for different entries.

If you answer #1, you will be asked the base year of your FYDP dollar entries, and if you answer #2 you will be asked for a base year each time you enter a dollar figure. ①

Each time you make a dollar entry in LCCE you will be asked to enter the number of years which must be converted and to provide a dollar figure for each year. The model will convert these entries to constant budget dollars and add them to make up the single entry for LCCE. ①

You will be questioned each time you make a dollar entry as to what type (FYDP or Constant Budget) dollars you are inputting and the base year. Each dollar entry will require an answer to the following question:

Are these dollars in:

1. Constant Budget Dollars
2. FYDP Dollars (1 year only)
3. No funds in this category (Note: Can NOT be used with unit prices)
4. FYDP Dollars over several years

Your answer may lead to further questioning to allow the model to identify the type of dollars you are inputting.

① Continue with LCCE

## LCCE ESCALATION QUESTIONS

Figure I

1. Each based on a SINGLE fiscal year, or
2. Partially composed of entries based on several years of FYDP dollars

If you answer #1, you will be asked:

Are these single-year FYDP dollar entries:

1. All based on a year which you can specify now, or
2. Based on different single fiscal years for different entries.

If you answer #1, you will be asked the base year of your FYDP dollar entries, and if you answer #2 you will be asked for a base year each time you enter a dollar figure.

If you answer #2 to the FYDP dollar question (that your FYDP dollar entries are partially composed of entries based on several years of FYDP dollars), then each time you make a dollar entry in LCCE you will be asked to enter the number of years which must be converted and to provide a dollar figure for each year. The model will convert these entries to constant budget dollars and add them to make up the single entry for LCCE.

Finally, if you answer #3 (A combination of constant budget and FYDP dollars) to the initial escalation question, you will be questioned each time you make a dollar entry as to what type (FYDP or constant budget) dollars you are inputting and the base year. Each dollar entry will require an answer to the following question:

Are these dollars in:

1. Constant Budget Dollars
2. FYDP Dollars (1 year only)
3. No funds in this category (NOTE: Can NOT be used with unit prices)

#### 4. FYDP Dollars over several years

Your answer may lead to further questioning to allow the model to identify the type of dollars you are inputting.

FYDP Dollars in Funding Profile: As mentioned above, the ability to input unprogrammed requirements into the Funding Profile has been removed from the model to allow equivalent FYDP dollars to be printed out under the constant budget dollars. You need do nothing to cause this to happen. See enclosure (1) for a sample of what the new Funding Profile will look like. This change has been made to accommodate HQMC programmers and budgeters, who are accustomed to seeing only FYDP dollars.

Procurement Appropriations: The final change is the addition of the capability to identify OMMC or OMMCR funding for system procurement in the Funding Profile. This change was made to accommodate non-centrally managed Marine Corps programs, which will be OMMC and/or OMMCR funded. If you are in doubt as to the appropriation which will fund your procurement, contact the HQMC program sponsor for guidance. During the Funding Profile input phase, after you enter the name of the Major System, you will be asked: "Is this system to be procured with PMC funds? (Y/N)"

If you answer yes, the model will proceed as before. If you answer no, your procurement will be assumed to be funded by OMMC.

If you have reserve participation in the program you will be asked:

Are reserve items procured with O&MMCR funds? (Y/N)

If you answer yes, you will be allowed to enter both OMMC and OMMCR funds for major system procurement.

Model Availability: Disks with the revised program are available

from RPE (Mrs. Hodnett or Major Koelln, (202) 694-1009 or 694-1998, AUTOVON 224-1009/1998); FDB (Ms Bogan, (202) 694-2570, AUTOVON 224-2570); or at MCDEC Analysis Support Branch, DC/S Plans, Development Center (Major Franke, (703) 640-3236 or AUTOVON 278-3236). Please bring a trade-in disk.